

What is claimed is:

1. A permanent magnet comprising a rare earth metal-based permanent magnet having provided on the surface thereof a chemical conversion film containing, at least as the constituent components thereof, (a) at least one of the metals selected from molybdenum, zirconium, vanadium, and tungsten; (b) a rare earth metal constituting the magnet; and (c) oxygen.

2. A permanent magnet as claimed in Claim 1, wherein said film further contains phosphorus.

3. A permanent magnet as claimed in Claim 1, wherein said film further contains iron.

4. A permanent magnet as claimed in Claim 1, wherein said film is provided at a film thickness of from 0.001 μm to 1 μm .

5. A permanent magnet as claimed in Claim 1, wherein said rare earth metal-based permanent magnet is a R-Fe-B based permanent magnet.

6. A permanent magnet as claimed in Claim 5, wherein said R-Fe-B based permanent magnet is a Nd-Fe-B based permanent magnet.

7. A method for producing a permanent magnet comprising a rare earth metal-based permanent magnet having provided on the surface thereof a chemical conversion film containing, at least as the constituent components thereof, (a) at least one of the metals selected from molybdenum, zirconium, vanadium, and tungsten; (b) a rare earth metal constituting the magnet;

and (c) oxygen; said method comprising treating the surface of a rare earth metal-based permanent magnet with a treatment solution containing at least one selected from the group consisting of a molybdic acid or a salt thereof, a molybdenum oxide, a molybdophosphoric acid or a salt thereof, a zirconic acid or a salt thereof, a zirconium oxide, a vanadic acid or a salt thereof, a vanadium oxide, a tungstic acid or a salt thereof, and a tungsten oxide.

8. A production method as claimed in Claim 7, wherein said treatment solution further contains an inorganic acid or a salt thereof.

9. A production method as claimed in Claim 8, wherein said inorganic acid or the salt thereof is phosphoric acid or a salt thereof and/or a phosphorous acid or a salt thereof.

10. A production method as claimed in Claim 7, wherein said treatment solution further contains a divalent ion of magnesium.

11. A production method as claimed in Claim 7, wherein said treatment solution further contains a trivalent ion of iron.

12. A production method as claimed in Claim 7, wherein said treatment solution further contains an oxidizing agent.

13. A production method as claimed in Claim 12, wherein said oxidizing agent is nitric acid or a salt thereof and/or a nitrous acid or a salt thereof.